

REMARKS

This Amendment is submitted in response to the Office Action of May 16, 2006 (hereinafter "the Office Action"). Upon entry of this Amendment, claims will be canceled without prejudice, , claim mended, and new claims submitted. Therefore, claims 15, 18, and 20-27 will be pending, including newly submitted claims.

All references to the claims, except as noted, will be made with reference to the claim list above beginning on page 3. All references to "the Office Action," except as noted, will be referencing the most recent Office Action dated May 16, 2006. Line numbers in the Office Action, except as noted, will count every printed line, except the page header, but including section headings. If there is any confusion or questions regarding any aspect of this Amendment, the Examiner is invited to contact the undersigned.

Amendment

The "Cross Section to Related Applications" section of the specification was amended to replace attorney docket number with the corresponding patent application Serial Number.

Claims 1-14, 16, 17, and 19 are canceled without prejudice.

Claim 15 is amended to better distinguish the invention from the prior art. Specifically, the preamble of claim 15 is amended to indicate that it is a method for copying data from a first physical page in memory that is directly accessible to input/output devices to a second page in physical memory. Support for "directly accessible" is provided in paragraph 2 of the specification. Support for copying data from a first page to a second page is present in paragraph 8 of the specification. The term, "physical" identifies that the page is accessed via physical address, as the term is consistently used throughout the specification. This is also standard parlance in the industry, as exemplified by the cited reference Arndt (see, e.g., col. 3, lines 6-10).

In addition, claim 15 is amended to include an operation for requiring that each input/output device first register an access to the memory by a physical address of the memory prior to the access of the memory (claim 15, lines 4-5). Support for this limitation can be found in lines 1-3 of paragraph 27. Claim 15 further is amended to include that the input/output devices register the access by recording the source of data the memory being accessed and the physical address of each physical page of the memory being accessed in a

page mapping structure (claim 15, lines 5-8). Support for this limitation is provided in paragraph 27, at lines 15-17.

In addition, claim 15 is amended to include obtaining a lock on a page mapping structure corresponding to the first physical page thereby preventing new accesses to the first physical page by one of the input/output devices (claim 15, lines 9-10). Support for this limitation is provided in paragraph 33 wherein it is suggested that the lock restricts access to the page mapping structure. Logically, if each input/output device is required to first register an access prior to accessing memory by recording the access in the page mapping structure (claim 15, lines 4-8), and the page mapping structure is locked, (claim 15, lines 9-10), then the input/output device therefore is prevented from making new accesses to the first physical page.

In addition, claim 15 is amended by including an operation for disabling access by registered devices to the memory by signaling the registered devices to halt access to physical address space, the registered devices being devices that have registered for access to the first physical page using the page mapping structure (claim 15, lines 11-14). Support for this limitation is provided in the last three lines of paragraph 34.

In addition, claim 15 is amended to clarify that data is copied from a first physical page to a second physical page (claim 15, lines 15-17). Support is again provided in paragraph 8.

Finally, claim 15 is amended to clarify that enabling access to the page in the memory includes signaling the registered input/output devices to resume accessing the physical address space and by releasing the lock on the page mapping structure (claim 15, lines 18-20). Support for this amendment is provided in the last two lines of paragraph 35 and in paragraph 36.

Claims 18, and 20-22 are amended to provide better consistency with amended depended-upon claim 15. New claims 23-27 are machine readable medium claims that generally parallel the method claims 17, 18, and 20-22. Support for a machine readable medium is provided in paragraph 41.

No new matter has been entered by way of this Amendment.

Objection to the Specification

The disclosure is objected for providing the Attorney Docket Number of a related

application, rather than the current Serial Number. This Amendment includes a correction to the offending paragraph to overcome this rejection. Reconsideration of the objection is therefore respectfully requested.

Claim Objections

Claims 3, 4, and 11 are under objection for various informalities. These objections are obviated by the present Amendment, which cancels claims 1-14 without prejudice.

Claim Rejections – 35 U.S.C. § 102(e)

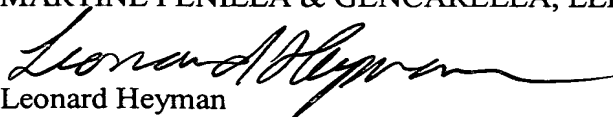
Claims 1-22 stand rejected under 35 U.S.C. § 102(e) for being anticipated by U.S. Patent 6,931,471 issued to Arndt et al. (hereinafter, "Arndt"). Applicants respectfully traverse.

Arndt is directed to a hardware solution to the problem of relocating memory accessible by devices using direct memory access (DMA) (Arndt, Col. 1, lines 35-38). Referring to Figure 1, Arndt presents an I/O bridge 130, which provides address translation logic 156. The address translation logic and other logic effectively provides a virtual address translation layer for use by I/O devices (col. 4, lines 25-33). Thus, I/O devices in Arndt do not directly access memory by physical address.

In addition, Arndt does not mention obtaining a lock on the table.

Since the now-pending claims clearly define over the prior art of record, Applicants respectfully submit that the present Application is now in condition for allowance. A Notice of Allowance is therefore respectfully requested.

If the Examiner has any questions concerning the present amendment, the Examiner is kindly requested to contact the undersigned at (408) 774-6933. If any other fees are due in connection with filing this amendment, the Commissioner is also authorized to charge Deposit Account No. 50-0805 (Order No. SUNMP399). A duplicate copy of the transmittal is enclosed for this purpose.

Respectfully submitted,
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